ETHER NDE

BonPEC

Innovative Pulsed Eddy Current Technology

- State-of-the-art Pulsed Eddy Current Technology.
- Two probes as standard within the kit.
- Two screen display options.
- Lightweight adaptable system.
- NDT Inspection workflow based software delivering advanced PECT data analysis and evaluation.
- Advanced reporting features.
- Applications include: In-Service Corrosion Monitoring, Splash Zone Inspection, Wall Thickness Monitoring and Inspection through Repair Wraps, Remaining Ligament Assessment through Corrosion.

BonPEC delivers a non-intrusive electromagnetic technique based on Pulsed Eddy Current which allows detection, measurement and monitoring of corrosion in low alloyed carbon steel pipes and vessels through their insulations, coatings, paints, concrete fireproofing or marine growth. BonPEC does not require direct contact with the inspection target, nor cleaning or special preparation of the surface of the object to be examined, therefore no costly and unnecessary insulation removal is needed to perform PEC inspection, which delivers a considerable cost saving for the client.

Method Features

- Non-Intrusive Inspection (NII).
- No direct surface contact.
- No surface cleaning or preparation required.
- No removal of sheeting or thermal insulation.
- Measures through marine growth, coatings and concrete.
- Technology is effective above and underwater.

Specifications

- Carbon steel (ferromagnetic)
- WT 3-65 mm
- Insulation thickness <200 mm (probes dependant)
- Aluminium or Stainless Steel sheeting
- Temp. -150°C to 500 °C
- Min. pipe diameter 50mm (2”)
- Accuracy 5 %
- Down to 50% AWT reduction to the reference AWT
- +/- 50% Lift-Off variation to the reference Lift-Off
- Repeatability 2%

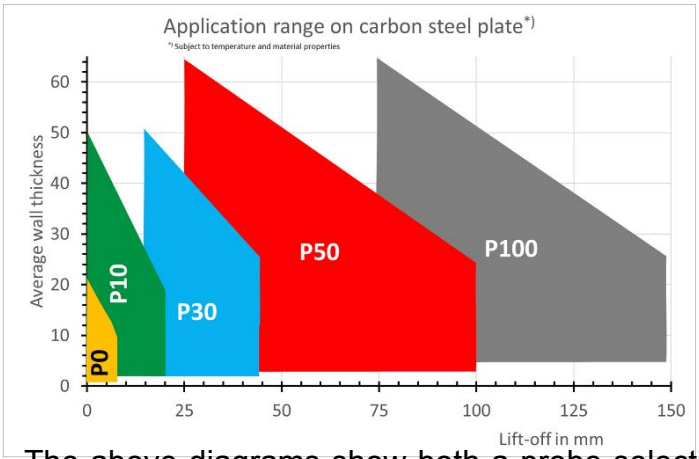
PECT is the efficient and cost effective solution for the examination of insulated and corroded components and parts in the on- and offshore industry and in the energy sector.

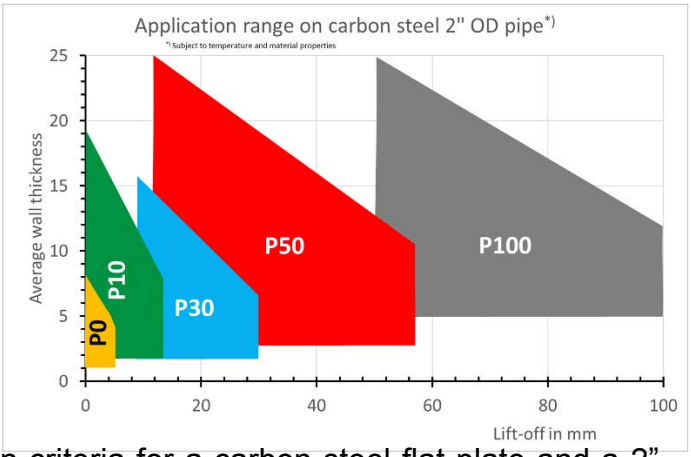
Corrosion Under Insulation (CUI), Corrosion Under Fireproofing (CUF), Flow Accelerated Corrosion (FAC) and Well Integrity inspection are typical successful PECT applications, solutions and benefits. PECT performance is effective also for semi-contact measurements carried out with dirty, rough, cold and high temperature objects. In general PECT can perform thickness assessment on Carbon Steel where there is a stand-off, which means ultrasonic thickness measurement is not applicable.

Probes

Depending on the lift-off and the average wall thickness of the object being inspected, there is a range of probes to choose from in order to optimize the reliability of the results. For a large lift-off a large probe is needed. Two probes are available as standard, P0.5 and P1.0, with other options available.

The applicable range of each probe depends on the material properties and measurement geometry of the target, but most importantly the lift-off and average wall thickness.

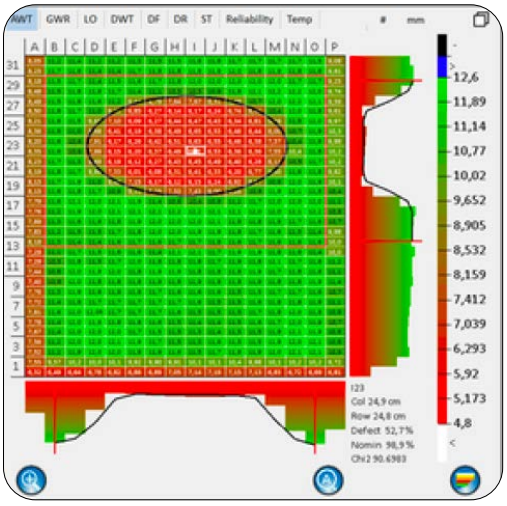




The above diagrams show both a probe selection criteria for a carbon steel flat plate and a 2" outer diameter carbon steel pipe, based on average wall thickness and lift-off.

BonPEC probes are designed to minimize false readings, hence they are insensitive to metal objects near the probe, except for the object that is right below it. Due to magnetic field focusing, the probes are (within boundaries) insensitive to lift-off change, angle mis-match or variations of sheeting thickness. These properties are all important for field measurements, reducing false calls and increasing effectiveness of data interpretation.

Software

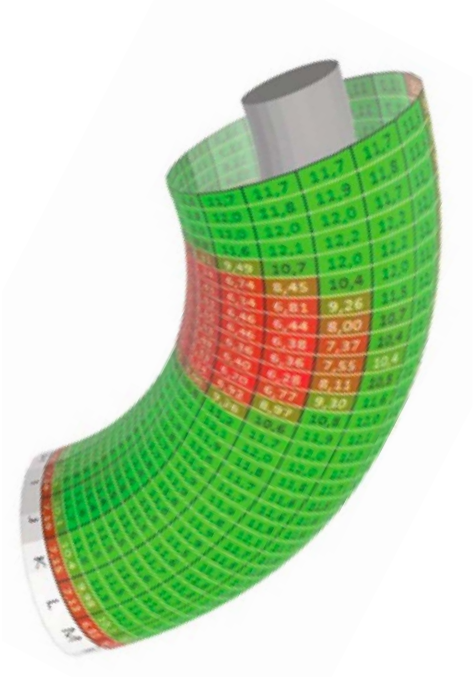


BonPEC software has been developed based on the way a typical NDT survey is performed. Initially one needs to know what needs to be investigated, which is represented by client and object parameters.

Important parameters are the type of object (pipe, plate or bend), the nominal wall thickness, the lift-off and the of cladding used etc. Based on this information and the experience of the operator, a suitable probe is selected and a suitable scan is defined. The BonPEC program gives tools to inspect, check, evaluate and report the measurement data.

Software Features

- Fast data collection
- Direct real-time interpretation and results;
- Digitally stored data.
- User-friendly operation (touchscreen)
- Advanced PEC signal presentation feature.
- Advanced PEC data analysis and evaluation algorithms (footprint minimum WT value etc.)
- Advanced reporting features (Auto report generation, Graphs, 3D result projection on object model/photo etc.)
- In-service corrosion monitoring.
- Interface language user dependent.
- Operator level dependent software and training.



KIPEC002 KIT, BonPEC, Pulsed Eddy Current (PEC) Instrument, 11.6” Rugged Tablet	
IPEC001	Instrument, BonPEC, Pulsed Eddy Current (PEC) Instrument, Flaw Detector.
APEC001	Accessory, BonPEC - Power Adapter + Input Plugs (UK, EU, US & Australia)
ALL08-L08-025-PEC	Accessory, Lead, Lemo 8-Way - Lemo 8-Way, 2.5m, BonPEC
PEC-P10-9-20	Probe, BonPEC, Pulsed Eddy Current (PEC), Lift Off Range: 0-20mm
PEC-P50-25-100	Probe, BonPEC, Pulsed Eddy Current (PEC), Lift Off Range: 25-100mm
RUGGED TABLET PC 11.6”	Durabook U11I Rugged Tablet, Windows 11 Pro 8GB RAM 256GB Storage + Power
A487	Adapter (Hot-Swap Battery 10 hour Battery, Touch Screen + Keys)
AWEL003	Accessory, Adjustable Padded Shoulder Strap Quick-Release Clips
AC026	Accessory, BonPEC Hard Carry Case
60130	Software, BonPEC - Data Analysis, Storage & Reporting Software
A509	USB LEAD - USB 2 Male Right Angled A - 6in - USB2 Male Right Angle B, Ultra-thin Cable Dia 3.2mm, (USB Custom Cable - AL/BL/6in - REQ#17417)
A504	USB LEAD - USB 2.0, Male USB A to Male USB B, 1.8m

KIPEC003 KIT, BonPEC, Pulsed Eddy Current (PEC) Instrument, 14” Rugged Notebook	
IPEC001	Instrument, BonPEC, Pulsed Eddy Current (PEC) Instrument, Flaw Detector.
APEC001	Accessory, BonPEC - Power Adapter + Input Plugs (UK, EU, US & Australia)
ALL08-L08-100-PEC	Accessory, Lead, Lemo 8-Way - Lemo 8-Way, 10m, BonPEC
PEC-P10-0-20	Probe, BonPEC, Pulsed Eddy Current (PEC), Lift Off Range: 0-20mm
PEC-P50-25-100	Probe, BonPEC, Pulsed eddy Current (PEC), Lift Off Range: 25-100mm
A393 Notebook	Getac S410 G5, i5-1340P, 8GB RAM, 256GB PCIe SSD, , FHD & Touchscreen (1920x1080), (Without Webcam), , Windows 11 Pro (GETAC: ST2D5AQ3SDXX)
A394 Battery Pack	MAIN BATTERY - NOTEBOOK - GETAC S410, Battery Type : Lithium-ion 6 cells, 74.5WH, Nominal Voltage : 10.8V, Capacity : 6900mAh, (GETAC: GBM6X6)
AWEL003	Accessory, Adjustable Padded Shoulder Strap Quick-Release Clips
AC026	Accessory, BonPEC Hard Carry Case
60130	Software, BonPEC - Data Analysis, Storage & Reporting Software USB LEAD - USB 2 Male Right Angled A - 12in - USB2 Male Right Angle B -
A503	Ultra-thin Cable Dia 3.2mm
A504	USB LEAD - USB 2.0, Male USB A to Male USB B, 1.8m

BonPEC Probes (Compatible across both Kit Configurations)	
PEC-P0-0-7	Probe, BonPEC, Pulsed eddy Current (PEC), Lift Off Range: 0-7mm, Nominal Lift Off: 0mm, Wall Thickness at Nominal Lift Off: 1-10mm
PEC-P10-0-20	Probe, BonPEC, Pulsed eddy Current (PEC), Lift Off Range: 0-20mm, Nominal Lift Off: 10mm, Wall Thickness at Nominal Lift Off: 2-20mm
PEC-P30-15-60	Probe, BonPEC, Pulsed eddy Current (PEC), Lift Off Range: 15-60mm, Nominal Lift Off: 30mm, Wall Thickness at Nominal Lift Off: 2-30mm
PEC-P50-25-100	Probe, BonPEC, Pulsed eddy Current (PEC), Lift Off Range: 25-100mm, Nominal Lift Off: 50mm, Wall Thickness at Nominal Lift Off: 3-30mm
PEC-P100-50-150	Probe, BonPEC, Pulsed eddy Current (PEC), Lift Off Range: 50-150mm, Nominal Lift Off: 100mm, Wall Thickness at Nominal Lift Off: 3-30mm

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t: +44 (0)1727 648050 e: sales@ethernde.com

www.ethernde.com

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